

Applicant : Anthony Mazarakis
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Attorney Docket No.: 13932- 002001
Examiner: Suhan Ni

Amendments to the Claims:

1. (Amended) A thin diaphragm electroacoustic transducer having [of] at least two elongated [two (binary)] interlaced coils [coil electroacoustic transducer] for use as loudspeaker, characterized by including a field replaceable sound emitting diaphragm that can be replaced without [the need] needing to manipulate wires, the electroacoustic transducer [and] comprising:

a) [A] a magnetic system [which comprises] comprising an upper plate pole, [1 the] two side poles, a [4 the] central pole [3] and [the] a row of Neodymium magnet bars, wherein two [5. Two] air gaps [22] are formed between the upper plate pole and the central pole[. The] and magnetic lines transversing the gap[,] create a high density field;[.]

b) [A] a thin foil diaphragm carrying at least two thin aluminum conductors [formatting] forming at least one binary interlaced coil, [11 and 12,] the two thin aluminum conductors being built the one into each other, and [which are] being situated substantially in the plane of the magnetic lines transversing the air gaps, wherein [gap 22 and] the conductors of the diaphragm, [being] when crossed by the same intensity of flux lines perpendicularly, at the totality of their length, are subject to the same force F upon [where,] the application of $F=Bli$; and [gives the same force F.]

c) [A] a diaphragm sound emitting assembly[, 2] comprising a frame made of non-ferrous sheet metal, on which is tensioned a vibratable [very] thin diaphragm [2A] comprising a [of] high temperature polymer on which are formed [formatted a multiplicity of] two elongated coils [11 and 12] of aluminum foil, the elongated coils being [which are] identical, [and] symmetrical, and interlaced the one into the other.

2. (Amended) [A] The thin diaphragm electroacoustic transducer as claimed in claim 1, wherein [in which] the [said] diaphragm comprises [is carrying] a double coil [2A] configuration, is adhered along the periphery of the frame, and the elongated conductors of the two coils are terminated in two aluminium foil conducting islands, [9-9A and 10-10A] each oof which are symmetrically located at [the] extremities of the [said] diaphragm assembly [2].

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3. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 2, wherein **[in which]** the **[said]** conducting islands, when the diaphragm assembly [2] is properly inserted inside the transducer, are situated in **[the]** a sliding routing or path of a pair of contacts **[13B and 13C]** which are spring loaded, and supported on **[the]** a pair of sliding covers, whereby **[thus]** at the end of the sliding route of each cover, two spring loaded contacts are pressed against the two **[mating]** conducting islands **[9-9A and 10-10A]**.

4. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 3, wherein the **[in which]** spring loaded contacts **[13B and 13C]** are gold plated at their tip and soldered on the sliding cross shaped contact carrier [13], the contact carrier being **[which is]** made of copper laminated Bakelite sheet.

5. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 4, wherein **[in which]** the copper laminated sheet is separated in two conducting surfaces, and one contact is placed on **[13A one for]** each contact. The one end of the cross, shaped contact carrier 13, are soldered two flexible conductors of which their other end are soldered on the riveting member of the loudspeaker terminal.

6. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 5, wherein **[in which]** when the diaphragm assembly [2] is **[to be]** replaced[,]
by removing the two transducer covers [8], the diaphragm assembly is free to be withdrawn.

7. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 6, wherein when **[in which]** the new diaphragm [2] is inserted, **[and]** the connecting of the two coils **[11 and 12]** with the corresponding terminals **[16,]** is accomplished **[simply]** by reclosing the transducer's upper and lower covers, whereby the **[. This]** reclosing

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action [, by the covers 8, automatically] terminates the one coil on the upper terminals and the other coil on the lower terminals [16].

8. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 7, wherein [in which the replaceable diaphragm and frame integral unit 2, provides another advantage, which relates with the percentage of its area being actively driven by the audio signal. The] two semicircular sections of the coils are free to vibrate, [and] [the] an audio current flowing in the [that] semicircular section of each coil is actively contributing in the sound producing process[, in the same procedure as the linear sections of the coil, [thus substantially] thereby increasing the transducer efficiency.

9. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 8, wherein [in which the] a central pole [3] profile cut[, has a shape comprising two outer edges bounding an inner region [, which resembles a dry river 23 with its two banks 21,] and reduces the number of useful magnetic lines crossing the center part of the diaphragm which is empty of conductors[. The] and one or more reduced lines [from departing the bed of the river,] emanating from the inner region are added to those crossing [usefully the] an active gap [22] area and crossing the coils' conductors.

10. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 9, wherein [in which the] a shape of the central pole, where its upper part groove[, serves also the purpose of accepting] is configured to accept an elongated soft material that overflows the groove which acts as bumper for the diaphragm[, during high amplitude excursions.

11. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim [10] 1, wherein [in which] the [binary] interlaced coils [11-12] of its diaphragm[, can be utilized in one or more [a number of] modes, the one or modes comprising

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[by those skilled in the art of sound reproduction:] a) In series connection for increased sensitivity, b) in parallel connection for increased electrical power handling ability, c) [furthermore] for [developing such applications] as a crossover in two different frequencies, d) as a DDL Direct Digital Loudspeaker, e) as a feedback optimizer circuitry, f) as a magnetic damping circuitry, and h) in a two winding push-pull configuration[, h) other inventive applications].